

Remarks

Claims 1-8, 13-16, 18 and 19 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 2,618,357 issued to Harlow (“Harlow”). Furthermore, claims 9-12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Harlow in view of U.S. Patent No. 3,336,730 issued to McBride et al. (“McBride et al.”). Claim 17 was rejected under 35 U.S.C. 103(a) as being unpatentable over Harlow in view of International Patent Publication No. WO 01/70376.

In this response, Applicants have amended claims 1 and 16 and cancelled claim 15. Claims 1-14 and 16-19 remain pending in this application. Reconsideration and withdrawal of the rejections and objections in view of the amendments and following remarks is hereby respectfully requested.

A. Rejections under 35 U.S.C. §102(b):

Claims 1-8, 13-16, 18 and 19 were rejected under 35 U.S.C. 102(b) as being anticipated by Harlow.

Harlow describes a frame diffusion apparatus for the separation and concentration of gases by diffusion. The apparatus relates to the separation of gases in general with no specific teachings relating to hydrogen gas in particular.

Applicants have amended claim 1 to add the additional feature from claim 15 and have cancelled claim 15. Applicants have also amended claim 16 to change its dependency from claim 15 to claim 1. As amended, claim 1 recites a membrane module for hydrogen separation that includes, among other features, a stack of flat membrane packs, a feed space for a reformate gas disposed between every two membrane packs in the stack, and “a device for creating gas turbulence disposed in at least one of the feed spaces.” Support for the feature is found in the Applicant’s specification, for example, at paragraphs [0076] through [0080] and in Fig. 12.

In addition to the lack of specific teachings relating to hydrogen in Harlow, Applicants respectfully submit that Harlow does not describe at least the feature of a device for creating gas turbulence disposed in a feed space. The Examiner has not identified any structure described in Harlow that might correspond to the recited feature of claim 15. Indeed, Applicants submit that Harlow does not describe -- nor teach or suggest -- any structure disposed in a feed space for creating gas turbulence.

Withdrawal to the rejections under 35 U.S.C. § 102(b) is respectfully requested.

B. Rejections of Claims 9-12 under 35 U.S.C. 103(a):

Claims 9-12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Harlow in view of McBride et al.

McBride et al. describes a hydrogen continuous production method and apparatus.

Applicants respectfully submit that McBride et al. does not cure the deficiency of Harlow and that the combination would not have suggested to a person of ordinary skill in the art the Applicants invention as recited in independent claim 1. Specifically, neither reference suggests at least the feature of a device for creating gas turbulence disposed in feed space between adjacent membrane packs.

Withdrawal of the rejections to dependent claims 9-12 under 35 U.S.C. § 103 is respectfully requested.

C. Rejection of Claim 17 under 35 U.S.C. 103(a):

Claim 17 was rejected under 35 U.S.C. 103(a) as being unpatentable over Harlow in view WO 01/70376.

WO 01/70376, which is discussed thoroughly in Applicant's specification at paragraphs [0007] and [0008] describes a membrane module having a parallel flow that contains a plurality of flat membrane packs. A plurality of these membrane packs are stacked on top of one another forming a compact stack having flat lateral surfaces, feed spaces for reformate gas being kept open between the individual membrane packs using sandwiched feed frames.

Applicants respectfully submit that WO 01/70376 does not cure the deficiencies of Harlow and McBride et al., and does not suggest at least the feature of a device disposed in a feed space for creating turbulence as recited in independent claim 1.

Withdrawal of the rejection to claim 17 is respectfully requested.

CONCLUSION

It is respectfully submitted that the application is now in condition for allowance.

Respectfully submitted,

DAVIDSON, DAVIDSON & KAPPEL, LLC

By: 
William C. Gehris, Reg. No. 38,156
(signing for Thomas P. Canty, Reg. No. 44,586)

Davidson, Davidson & Kappel, LLC
485 Seventh Avenue - 14th Floor
New York, New York 10018
(212) 736-1940